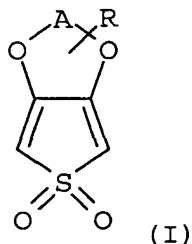


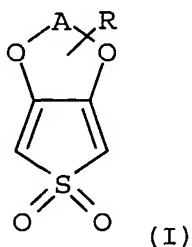
## WE CLAIM:

1. A 3,4-alkylenedioxythiophenedioxide compound represented by formula (I):



10 in which: A represents a C<sub>1-5</sub>-alkylene bridge; R represents an optionally substituted C<sub>1-24</sub>-alkyl, C<sub>3-18</sub>-cycloalkyl, C<sub>1-18</sub>-alkoxy or polyethylene oxide group (optionally with at least one substituent selected from the group consisting of an alcohol, amide, ether, ester or sulphonate group) or an optionally substituted aryl group.

- 15 2. Compound according to claim 1, wherein said compound is 2,3-dihydro-thieno[3,4-b][1,4]dioxine 6,6-dioxide.
3. A polymer comprising monomeric units of at least one compound represented by formula (I):



25 in which: A represents a C<sub>1-5</sub>-alkylene bridge; R represents an optionally substituted C<sub>1-24</sub>-alkyl, C<sub>3-18</sub>-cycloalkyl, C<sub>1-18</sub>-alkoxy or polyethylene oxide group (optionally with at least one substituent selected from the group consisting of an alcohol, amide, ether, ester or sulphonate group) or an optionally substituted aryl group.

- 30 4. Polymer according to claim 3, wherein said polymer further comprises monomeric units of at least one thiophene or pyrrole compound.

5. Polymer according to claim 3, wherein said polymer further comprises monomeric units of a at least one 3,4-alkylenedioxythiophene compound.

5 6. Polymer according to claim 3, wherein said polymer further comprises monomeric units of at least one 3,4-alkylenedioxythiophene compound represented by formula (II):



(II)

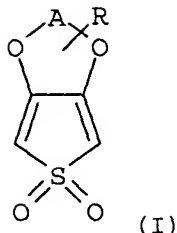
10 in which: A' represents a C<sub>1-5</sub>-alkylene bridge; R' represents an optionally substituted C<sub>1-24</sub>-alkyl, C<sub>3-18</sub>-cycloalkyl, C<sub>1-18</sub>-alkoxy or polyethylene oxide group (optionally with at least one substituent selected from the group consisting of an alcohol, amide, ether, ester or sulphonate group) or an optionally  
15 substituted aryl group.

7. Polymer according to claim 5, wherein said 3,4-alkylenedioxythiophene compound is selected from the group consisting of: 3,4-ethylenedioxythiophene, 3,4-propylenedioxythiophene, 3,4-dihydro-2H-thieno[3,4-b][1,4]dioxin-2-yl)methanol, 3,4-dihydro-2H-thieno[3,4-b][1,4]dioxepin-3-ol, (2,3-dihydro-thieno[3,4-b][1,4]dioxin-2-yl-methoxy)-acetic acid ethyl ester, (2,3-dihydro-thieno[3,4-b][1,4]dioxin-2-yl-methoxy)-acetic acid, 2-{2-[2-(2-methoxy-ethoxy)-ethoxy]-ethoxymethyl}-2,3-dihydro-  
20 thieno[3,4-b][1,4]dioxine and 4-(2,3-dihydro-thieno[3,4-b][1,4]dioxin-2-ylmethoxy)-butane-1-sulphonic acid sodium salt.

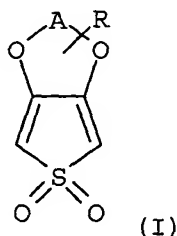
8. Polymer according to claim 5, wherein said 3,4-alkylene-dioxythiophene compound is 3,4-ethylenedioxythiophene.

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9. An aqueous dispersion of a polymer comprising monomeric units of at least one compound represented by formula (I):



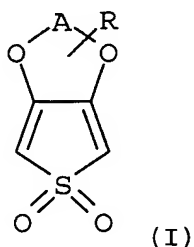
- in which: A represents a C<sub>1-5</sub>-alkylene bridge; R represents an optionally substituted C<sub>1-24</sub>-alkyl, C<sub>3-18</sub>-cycloalkyl, C<sub>1-18</sub>-alkoxy or polyethylene oxide group (optionally with at least one substituent selected from the group consisting of an alcohol, amide, ether, ester or sulphonate group) or an optionally substituted aryl group; and a polyanion.
10. Aqueous dispersion according to claim 9, wherein said polymer further comprises monomeric units of at least one thiophene or pyrrole compound.
  11. Aqueous dispersion according to claim 9, wherein said polymer further comprises monomeric units of at least one 3,4-alkylenedioxythiophene compound.
  12. Aqueous dispersion according to claim 9, wherein said polyanion is poly(styrenesulphonic acid).
  13. A chemical polymerization process for preparing an aqueous dispersion according to claim 9 comprising the steps of: (i) providing a solution of a polyanion; (ii) adding a compound represented by formula (I):



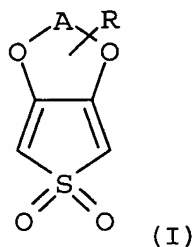
- in which: A represents a C<sub>1-5</sub>-alkylene bridge; R represents an optionally substituted C<sub>1-24</sub>-alkyl, C<sub>3-18</sub>-cycloalkyl, C<sub>1-18</sub>-alkoxy or polyethylene oxide group (optionally with at least one substituent selected from the group consisting of an alcohol, amide, ether, ester or sulphonate group) or an optionally substituted aryl group and at least one thiophene or pyrrole compound to the solution provided in step (i); and (iii) adding

an oxidizing or reducing system to the mixture provided in step (ii).

14. Chemical polymerization process according to claim 13, wherein  
 5 said thiophene or pyrrole compound is a 3,4-alkylenedioxy-thiophene compound.
15. A process for using an aqueous dispersion of a polymer  
 comprising monomeric units of at least one compound represented  
 10 by formula (I):

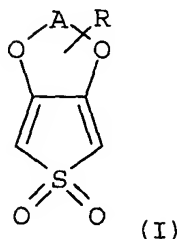


- in which: A represents a C<sub>1-5</sub>-alkylene bridge; R represents an  
 optionally substituted C<sub>1-24</sub>-alkyl, C<sub>3-18</sub>-cycloalkyl, C<sub>1-18</sub>-alkoxy  
 15 or polyethylene oxide group (optionally with at least one  
 substituent selected from the group consisting of an alcohol,  
 amide, ether, ester or sulphonate group) or an optionally  
 substituted aryl group, and a polyanion; for coating an object.
- 20 16. A printable paste containing an aqueous dispersion of a polymer  
 comprising monomeric units of at least one compound represented  
 by formula (I):



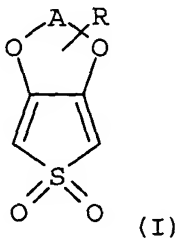
- in which: A represents a C<sub>1-5</sub>-alkylene bridge; R represents an  
 optionally substituted C<sub>1-24</sub>-alkyl, C<sub>3-18</sub>-cycloalkyl, C<sub>1-18</sub>-alkoxy  
 25 or polyethylene oxide group (optionally with at least one  
 substituent selected from the group consisting of an alcohol,  
 amide, ether, ester or sulphonate group) or an optionally  
 30 substituted aryl group; and a polyanion.

17. An electroconductive layer containing a polymer comprising monomeric units of at least one compound represented by formula (I):



in which: A represents a C<sub>1-5</sub>-alkylene bridge; R represents an optionally substituted C<sub>1-24</sub>-alkyl, C<sub>3-18</sub>-cycloalkyl, C<sub>1-18</sub>-alkoxy or polyethylene oxide group (optionally with at least one substituent selected from the group consisting of an alcohol, amide, ether, ester or sulphonate group) or an optionally substituted aryl group.

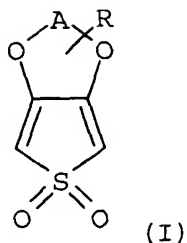
18. A process for using an electroconductive layer containing a polymer comprising monomeric units of at least one compound represented by formula (I):



in which: A represents a C<sub>1-5</sub>-alkylene bridge; R represents an optionally substituted C<sub>1-24</sub>-alkyl, C<sub>3-18</sub>-cycloalkyl, C<sub>1-18</sub>-alkoxy or polyethylene oxide group (optionally with at least one substituent selected from the group consisting of an alcohol, amide, ether, ester or sulphonate group) or an optionally substituted aryl group, in a light emitting diode.

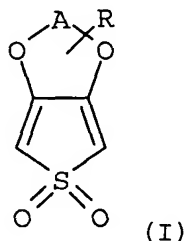
19. An antistatic layer containing a polymer comprising monomeric units of at least one compound represented by formula (I):

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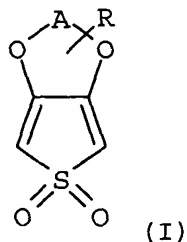
in which: A represents a C<sub>1-5</sub>-alkylene bridge; R represents an optionally substituted C<sub>1-24</sub>-alkyl, C<sub>3-18</sub>-cycloalkyl, C<sub>1-18</sub>-alkoxy or polyethylene oxide group (optionally with at least one substituent selected from the group consisting of an alcohol, amide, ether, ester or sulphonate group) or an optionally substituted aryl group.

20. An electroconductive pattern comprising a polymer comprising monomeric units of at least one compound represented by formula (I):



in which: A represents a C<sub>1-5</sub>-alkylene bridge; R represents an optionally substituted C<sub>1-24</sub>-alkyl, C<sub>3-18</sub>-cycloalkyl, C<sub>1-18</sub>-alkoxy or polyethylene oxide group (optionally with at least one substituent selected from the group consisting of an alcohol, amide, ether, ester or sulphonate group) or an optionally substituted aryl group.

21. A process for preparing an electroconductive pattern comprising a polymer comprising monomeric units of at least one compound represented by formula (I):



in which: A represents a C<sub>1-5</sub>-alkylene bridge; R represents an optionally substituted C<sub>1-24</sub>-alkyl, C<sub>3-18</sub>-cycloalkyl, C<sub>1-18</sub>-alkoxy or polyethylene oxide group (optionally with at least one substituent selected from the group consisting of an alcohol, amide, ether, ester or sulphonate group) or an optionally substituted aryl group, comprising the steps of: providing a layer of a polymer containing 3,4-alkylenedioxythiophene monomer units; and pattern-wise oxidizing said polymer containing 3,4-alkylenedioxythiophene monomer units to polymers containing 3,4-alkylenedioxythiophenedioxide monomer units.